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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,135	03/20/2007	Leif Axelsson	4660-5	3908

23117 7590 02/15/2011
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EXAMINER	
BEYEN, ZEWDU A	

ART UNIT	PAPER NUMBER
2461	

MAIL DATE	DELIVERY MODE
02/15/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/584,135	AXELSSON ET AL.	
	Examiner	Art Unit	
	ZEWDU BEYEN	2461	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 February 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18 and 20-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18,20,21,24-28,31 and 32* is/are rejected.

7)☒ Claim(s) *22-23, and 29-30* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-18, and 20-32, have been examined, and are pending

Response to Amendment

- This action is responsive to amendment dated 02/08/2011.
- Applicant's amendments filed on 02/08/2011, has been entered and considered.
- The rejection to the 35 USC § 112 rejections is hereby withdrawn in view of Applicants' amended claims.
- Claims 20, and 27 are amended
- Claims 1-18, and 20-32 are pending.
- Claims 1-18, 20-21, 24-28, and 27-28, 31-32 stand rejected.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 4, and 6 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1,2, and 6, of copending Application No. 10/584136. in view of Jain to **(US7373543)**

Claim 1 of the instant application and claim 1 of copending application 10/584136 are substantially directed to the same subject matter; Claim 1 of copending application does not specify determining two routes.

However Jain teaches selecting two routes and routing packet via the two routes **(abstract discloses identifying a first path and a second path. The first path is between a first one of the network elements and a second one of the network elements, as is the second path, and A packet is sent from the first one of the network elements via the first path, while a duplicate packet is sent from the first one of the network elements via the second path)**

Therefor it would have been obvious to one ordinary skill in the art at the time the invention was made to add selecting two routes and routing packet via the two routes to the invention defined by claim 1 of the instant application for the purpose of allowing

nodes to route packets in different routes so that the intended node receives the packets more reliably.

Claim 6 of the instant application and claim 6 of copending application 10/584136 are substantially directed to the same subject matter; Claim 6 of copending application does not specify determining routes.

However Jain teaches selecting two routes and routing packet via the two routes **(abstract discloses identifying a first path and a second path. The first path is between a first one of the network elements and a second one of the network elements, as is the second path, and A packet is sent from the first one of the network elements via the first path, while a duplicate packet is sent from the first one of the network elements via the second path)**

Therefor it would have been obvious to one ordinary skill in the art at the time the invention was made to add selecting two routes and routing packet via the two routes to the invention defined by claim 6 of the instant application for the purpose of allowing nodes to route packets in different routes so that the intended node receives the packets more reliably.

Dependent claim 4 of instant application and dependent claim 2 of the copending application 10/584136 are substantially directed to the same subject matter.

This is a provisional obviousness-type double patenting rejection.

Claim comparison table

Claim No.	Instant application	Claim No.	Pending Application No. 10/584136
1	In an arrangement with a plurality, of nodes making up a multiple hop wireless communication network for routing data packets over transmission paths, a method for efficient routing in a- said multiple hop wireless communication network, said method comprising providing link status information to a link status monitor by acquiring link status quality between nodes in the network; the link status monitor updating a routing element with said link status information; the routing element determining at least two .possible routes with essentially similar link quality status for a data packet; and the routing element routing said data packet via the at least two determined routes.	1	A method for efficient routing in a multiple hop wireless communication network characterized in that, the routing method comprise the steps of: providing link status information by acquiring link status quality between nodes in the network; updating a routing element with said link status information; determining an appropriate route according to said link status information with respect to traffic content; and routing traffic according to said determined appropriate route.
4	The method according to claim 1 characterized in that said wireless link comprise the step of using a transmission system based on electromagnetic radiation with a frequency in the range of 100 kHz to 100 PHz.	2	The method according to claim 1 further comprising the step of using a transmission system based on electromagnetic radiation with a frequency in the range of 100 kHz to 100 PHz.
6	A system for efficient routing in a communication network having a plurality of nodes, each node comprising: link status acquiring means for acquiring information about link	6	A system for efficient routing in a multiple hop wireless communication network comprising:acquiring means for acquiring link status information between infrastructure nodes in a

status between neighboring nodes; updating means for updating routing means with said link status information; determination means using said link status information for determining at least two possible routes with essentially similar link quality status routing of a data packet; and routing means for routing said data packet via said at least two determined routes.	network comprising a plurality of nodes;updating means for updating said link status information to a routing element;determination means for determining an appropriate route with respect to traffic content; and routing means for routing data packets according to determined route

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 20-21, 26-28, and 31-32 are rejected under 103(a) as being unpatentable over Billhartz to **(US-PG-PUB-2003/0204587), in view of** Baines to **(US20040027994)**

Regarding claim 20, Billhartz **(US20030202476)** teaches A method for routing a data packet in a multiple hop wireless network from a source node to a destination node, the method comprising:

the source node sending a route request (RREQ) to one or more neighbor nodes**(see fig.2, and abstract discloses exchanging route request)**;

the source node receiving a route reply (RREP) message from at least one of the one or more neighbor nodes in response to the RREQ message**(see fig.2, [0034] discloses reply RREPQ message)**

the source node predicting future link status**(i.e. QOS route metrics)** of at least one link in a chain between the source node and a destination node based on the RREP message**([0034] discloses the source node generates QOS route metrics based upon updated QOS link metrics in replies RREPQ)**, in which the RREP message includes link status information on one or more links in the chain, **([0034] discloses the source node generates QOS route metrics based upon updated QOS link metrics in replies RREPQ)**, and in which the link status information of a link between two nodes in the

chain includes layer 1 parameters and/or layer 2 parameters(**[0032] discloses The QoS parameter is preferably based upon available bandwidth, error rate, end-to-end delay, end-to-end delay variation, hop count, expected path durability, and/or priority**)

the source node determining one or more routes for the data packet based on the predicted future link status of the at least one link(**[0034] Discloses based upon QOS route metrics the source node selects a route**) ; and

the source node routing the data packet through the determined one or more routes(**inherently source node routes data packet through the selected route).**

Billhartz does not explicitly teach link status information includes parameters that describe a time varying nature of radio channels of links between the nodes

However, Baines teaches link status information includes parameters that describe a time varying nature of radio channels of links between the nodes(**[0107] discloses There are many techniques well known in the art for determining the quality of a communications link. Quality decisions can be based on parameters including, but not limited to, mean interference level, SNIR, error rate, channel dispersion and fading characteristics. Using SINR has benefits because this quantity will already be being measured at the terminal and is thus known data)**

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to enable the system of Billhartz link status information includes parameters that describe a time varying nature of radio channels of links between the nodes, as suggested by Baines. This modification would benefit the system to efficiently

select a reliably routes or paths.

Regarding claim 21, Billhartz teaches The method of claim 20, wherein the layer 1 parameters include any one or more of a signal strength, a signal-to-interference-noise (SIN) ratio, a signal strength variation speed, a SIN variation speed, an average fading duration, a Doppler spread, and a Doppler shift, and wherein the layer 2 parameters comprise any one or more of a number of ACKs over a predetermined period of time, a number of NACKs over a predetermined period of time, and a number of bit errors detected and/or corrected through forward error correction (FEC) (**[0032] discloses The QoS parameter is preferably based upon available bandwidth, error rate, end-to-end delay, end-to-end delay variation, hop count, expected path durability, and/or priority**).

Regarding claim 26, Billhartz teaches the source node receiving a route error (RERR) message from at least one of the one or more neighbor nodes in response to the RREQ message, wherein the RREQ message includes the link status information on the one or more links in the chain, the RREQ message also including a prediction of failure from at least one intermediate node of a link between the at least one intermediate node and a next hop (**[0014] discloses the intermediate nodes and the destination node may detect whether the node can continue to support the requested QoS parameter of the QoS route request and, if not, generate a QoS error notification to the source node**) ; and

the source node determining the one or more routes for the data packet based on the RREQ message(**[0014] discloses the source node may maintain the selected route, upon receiving the QoS error notification, while transmitting a second quality-of-**

service (QoS) route request to discover new routing to the destination node based upon the QoS parameter).

Regarding claim 27, Billhartz teaches a node receiving a route request (RREQ) message from a first neighbor node**(see fig.2, and abstract discloses exchanging route request)** ;

the node predicting whether a link between the node and the first neighbor node is likely to fail in a near future, wherein in the prediction is a function of a link status between the node and the first neighbor node **([0014] discloses the intermediate nodes and the destination node may detect whether the node can continue to support the requested QoS parameter of the QoS route request and, if not, generate a QoS error notification to the source node**); and

the node sending a route error (RERR) message to the first neighbor node when it determines that the link is likely to fail in the near future**([0014] discloses the intermediate nodes and the destination node may detect whether the node can continue to support the requested QoS parameter of the QoS route request and, if not, generate a QoS error notification to the source node**), wherein the RERR message includes link status information of the link between the node and the first neighbor node**([0014] discloses the intermediate nodes and the destination node may detect whether the node can continue to support the requested QoS parameter of the QoS route request and, if not, generate a QoS error notification to the source node**),and

wherein the link status information of the link includes layer 1 parameters and/or layer 2 parameters(**[0032] discloses The QoS parameter is preferably based upon available**

bandwidth, error rate, end-to-end delay, end-to-end delay variation, hop count, expected path durability, and/or priority).

Billhartz does not explicitly teach link status information includes parameters that describe a time varying nature of radio channels of links between the nodes

However, Baines teaches link status information includes parameters that describe a time varying nature of radio channels of links between the nodes(**[0107] discloses There are many techniques well known in the art for determining the quality of a communications link. Quality decisions can be based on parameters including, but not limited to, mean interference level, SNIR, error rate, channel dispersion and fading characteristics. Using SINR has benefits because this quantity will already be being measured at the terminal and is thus known data)**

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to enable the system of Billhartz link status information includes parameters that describe a time varying nature of radio channels of links between the nodes, as suggested by Baines. This modification would benefit the system to efficiently select a reliably routes or paths.

Regarding claim 28, Billhartz teaches The method of claim 27, wherein the layer 1 parameters include any one or more of a signal strength, a signal-to-interference-noise (SIN) ratio, a signal strength variation speed, a SIN variation speed, an average fading duration, a Doppler spread, and a Doppler shift, and wherein the layer 2 parameters comprise any one or more of a number of ACKs over a predetermined period of time, a number of NACKs over a predetermined period of time, and a number of bit errors

detected and/or corrected through forward error correction (FEC) (**[0032] discloses The QoS parameter is preferably based upon available bandwidth, error rate, end-to-end delay, end-to-end delay variation, hop count, expected path durability, and/or priority**).

Regarding claim 31, Billhartz teaches The method of claim 27, further comprising: the node determining whether it is a destination node of the RREQ message(**see fig.2, and abstract discloses exchanging route request**);

the node forwarding the RREQ message to a second neighbor node when it is determined that the node is not the destination node(**see fig.2, and abstract discloses exchanging route request**);

the node receiving either a route reply (RREP) message or the RERR message from the second neighbor node in response to the RREQ message, in which when the RERR message is received, the RERR message includes a prediction of a failure of at least one link in a chain between the node and the destination node(**[0014] discloses the intermediate nodes and the destination node may detect whether the node can continue to support the requested QoS parameter of the QoS route request and, if not, generate a QoS error notification to the source node**),and the node forwarding the received RREP or the RERR message to the first neighbor node(**[0014] discloses the intermediate nodes and the destination node may detect whether the node can continue to support the requested QoS parameter of the QoS route request and, if not, generate a QoS error notification to the source node**).

Regarding claim 32, Billhartz teaches The method of claim 31, further comprising the

node modifying RREP or the RERR message to include the status link information of the link between the node and the first node prior to forwarding the RREP or the RERR message(**[0014] discloses the intermediate nodes and the destination node may detect whether the node can continue to support the requested QoS parameter of the QoS route request and, if not, generate a QoS error notification to the source node**)

3. Claims 1,5-8, 11-14,and 17-18 are rejected under 103(a) as being unpatentable over Billhartz to **(US-PG-PUB-2003/0204587), in view of** Jain to **(US7373543) further in view of** Baines to **(US20040027994)**

Regarding claims 1, 6, and 19, Billhartz teaches method for efficient routing in a multiple hop wireless communication network characterized in that data packets are routed over transmission paths **(see fig. 5, and abstract)**

providing link status information by acquiring link status quality between nodes in the network the link status information being provided by one of both of layer 2 means and layer 1 means **(abstract, discloses monitoring traffic communicated between nodes)** ;

the routing elements predicting future link qualities of links in a chain between a source node and a destination node based on the updated link information(**abstract, discloses storing in each nodes traffic information in database, thus this information enable the node to predicted the future quality of the link**)

updating a routing element with said link status information(**abstract, discloses storing in each nodes traffic information in database**) ;

determining possible routes with essentially similar link quality status for said data packet(**abstract, discloses selecting routes based on the stored traffic information**);

routing said data packet via the determined routes(**abstract , discloses selecting routes, inherently the selected routes are used for the purpose of routing packets).**

Billhartz does not explicitly teach selecting two routes and routing packet via the two routes, and link status information includes parameters that describe a time varying nature of radio channels of links between the nodes

However Jain teaches selecting two routes and routing packet via the two routes essentially similar link quality status for a data packet based on the predicted future link qualities of the links in the chain **(abstract discloses identifying a first path and a second path. The first path is between a first one of the network elements and a second one of the network elements, as is the second path, and A packet is sent from the first one of the network elements via the first path, while a duplicate packet is sent from the first one of the network elements via the second path)**

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to enable the system of Billhartz selecting two routes and routing packet via the two routes, as suggested by Jain. This modification would benefit the system to deliver packets to the intended party more reliably(see Jain, col.2 lines 13-19).

The combination of Billhartz and Jain does not explicitly teach link status information includes parameters that describe a time varying nature of radio channels of links between the nodes

However, Baines teaches link status information includes parameters that describe a time varying nature of radio channels of links between the nodes(**[0107] discloses There are many techniques well known in the art for determining the quality of a communications link. Quality decisions can be based on parameters including, but not limited to, mean interference level, SNIR, error rate, channel dispersion and fading characteristics. Using SINR has benefits because this quantity will already be being measured at the terminal and is thus known data)**

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to enable the system of The combination of Billhartz and Jain link status information includes parameters that describe a time varying nature of radio channels of links between the nodes, as suggested by Baines. This modification would benefit the system to efficiently select a reliably routes or paths.

Regarding claim 5, Billhartz teaches the method according to claim 4 characterized in that said transmission system comprise the step of using a transmission system standards IEEE 802.11 (**[0075] discloses IEEE 802.11**)

Regarding claim 7, Billhartz teaches a system according to claim 6 wherein

communication between said nodes is wireless **(abstract, discloses wireless mobile nodes).**

Regarding claim 8, Billhartz teaches a system according to claim 7 wherein the communication network is an ad hoc network **(abstract, discloses a mobile ad hoc network).**

Regarding claim 11, Billhartz teaches the system according to claim 10 characterized in that said transmission system is IEEE 802.11 standards (**[0075] discloses IEEE 802.11**)

Regarding claim 12, Billhartz teaches a node in a communication network having a plurality of nodes **(fig.5 and abstract)** , said node comprising processing means for processing network control information(**abstract discloses each node generating traffic information based upon how much traffic is being communicated between various nodes in the network)** ; storing means for storing network control information(abstract , **discloses storing in each nodes traffic information in database)** ; transmission means for transmitting data packets**(it is inherent to any node in the communication network)** ; link status acquiring means for acquiring link information comprising link status and link quality between neighboring nodes**(abstract, discloses monitoring traffic communicated between nodes**); determination means using acquired link information for determining at least two routes to a destination for routing of a data packet**(abstract, discloses selecting routes based on the stored traffic information)**; and routing means for routing said data packets via said determined

routes(**abstract , discloses selecting routes, inherently the selected routes are used for the purpose of routing packets**).

Billhartz does not explicitly teach selecting two routes and routing packet via the two routes, and link status information includes parameters that describe a time varying nature of radio channels of links between the nodes

However Jain teaches selecting two routes and routing packet via the two routes essentially similar link quality status for a data packet based on the predicted future link qualities of the links in the chain **(abstract discloses identifying a first path and a second path. The first path is between a first one of the network elements and a second one of the network elements, as is the second path, and A packet is sent from the first one of the network elements via the first path, while a duplicate packet is sent from the first one of the network elements via the second path)**

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to enable the system of Billhartz selecting two routes and routing packet via the two routes, as suggested by Jain. This modification would benefit the system to deliver packets to the intended party more reliably(see Jain, col.2 lines 13-19).

The combination of Billhartz and Jain does not explicitly teach link status information includes parameters that describe a time varying nature of radio channels of links between the nodes

However, Baines teaches link status information includes parameters that describe a time varying nature of radio channels of links between the nodes(**[0107] discloses There are**

many techniques well known in the art for determining the quality of a communications link. Quality decisions can be based on parameters including, but not limited to, mean interference level, SNIR, error rate, channel dispersion and fading characteristics. Using SINR has benefits because this quantity will already be being measured at the terminal and is thus known data)

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to enable the system of The combination of Billhartz and Jain link status information includes parameters that describe a time varying nature of radio channels of links between the nodes, as suggested by Baines. This modification would benefit the system to efficiently select a reliably routes or paths.

Regarding claim 13, Billhartz teaches the node according to claim 12 wherein communication between nodes is wireless **(abstract, discloses wireless mobile nodes)**.

Regarding claim 14, Billhartz teaches the node according to claim 13 wherein said communication network is an ad hoc network **(abstract, discloses a mobile ad hoc network)**.

Regarding claim 17, Billhartz teaches the node according to claim 16 characterized in that said transmission system is IEEE 802.11 standards **([0075] discloses IEEE 802.11)**.

Regarding claim 18, Billhartz teaches a wireless communication network comprising a system according claim 6, comprising one or several nodes **(see fig.5, and abstract)**.

4. Claim 2 is rejected under 103(a) as being unpatentable over Billhartz in view of Jain and Baines and further in view of Kuszmaul to (US 5,111,198)

Regarding claim 2, Billhartz teaches the method according to claim 1, but Billhartz does not teach combining said data packets at a destination node.

However, Kuszmaul teaches combining said data packets at a destination node **(col.2, lines 9-12, discloses combining message that are routed from multiple routes)**

Therefore it would have been obvious to one ordinary skill in the art at the time the invention was made to enable the method of Billhartz combine data packets at destination node, as suggested by Kuszmaul. This modification would benefit the method of Billhartz to assemble received packets at each node that comes from different routes.

5. Claims 3,4,9,10,15,and 16 are rejected under 103(a) as being unpatentable over Billhartz in view of Jain and Baines and further in view of Boaz to (**US-PG-PUB-2008/0048883**)

Regarding claim 3, Billhartz teaches the method according to claim 1, but Billhartz doe not teach replacing one of said data packets with parity bits for error detection and error correction purposes

However, Boaz teaches replacing one of said data packets with parity bits for error detection and error correction purposes (**[0064] discloses CRC error checking on every message**)

Therefore it would have been obvious to one ordinary skill in the art at the time the invention was made to enable the method of Billahrtz transmit parity bits for error detection and error correction purpose, as suggested by Boaz. This modification would benefit the method of Billhartz to validate the transmitted packets.

Regarding claim 4, Billhartz teaches the method according to claim 1, but Billhartz does not teach using a transmission system based on electromagnetic radiation with a frequency in the range of 100 kHz to 100 PHz

However, Boaz teaches a transmission system based on electromagnetic radiation with a frequency in the range of 902-928Mhz (**[0063] discloses Transmit and receive frequency: 902-928 MHz)**

Therefore it would have been obvious to one ordinary skill in the art at the time the invention was made to enable the method of Billahrtz implement a transmission system based on electromagnetic radiation with a frequency in the range of 902-928 MHz, as suggested by Boaz. This modification would benefit the method of Billhartz to use a wide range of frequency as a design specification.

Regarding claim 9, Billhartz teaches the system according to claim 6, but Billhartz doe not teach replacing one of said data packets with parity bits for error detection and error correction purposes

However, Boaz teaches replacing one of said data packets with parity bits for error detection and error correction purposes (**[0064] discloses CRC error checking on every message**)

Therefore it would have been obvious to one ordinary skill in the art at the time the invention was made to enable the method of Billahrtz transmit parity bits for error detection and error correction purpose, as suggested by Boaz. This modification would benefit the method of Billhartz to validate the transmitted packets.

Regarding claim 10, Billhartz teaches the system according to claim 7, but Billhartz does not teach using a transmission system based on electromagnetic radiation with a frequency in the range of 100 kHz to 100 PHz

However, Boaz teaches a transmission system based on electromagnetic radiation with a frequency in the range of 902-928Mhz (**[0063] discloses transmit and receive frequency: 902-928 MHz**)

Therefore it would have been obvious to one ordinary skill in the art at the time the invention was made to enable the method of Billahrtz implement a transmission system based on electromagnetic radiation with a frequency in the range of 902-928 MHz, as suggested by Boaz. This modification would benefit the method of Billhartz to use a wide range of frequency as a design specification.

Regarding claim 15, Billhartz teaches the node according to claim 12, but Billhartz doe

not teach replacing one of said data packets with parity bits for error detection and error correction purposes

However, Boaz teaches replacing one of said data packets with parity bits for error detection and error correction purposes **([0064] discloses CRC error checking on every message)**

Therefore it would have been obvious to one ordinary skill in the art at the time the invention was made to enable the method of Billahrtz transmit parity bits for error detection and error correction purpose, as suggested by Boaz. This modification would benefit the method of Billhartz to validate the transmitted packets.

Regarding claim 16, Billhartz teaches the node according to claim 12, but Billhartz does not teach using a transmission system based on electromagnetic radiation with a frequency in the range of 100 kHz to 100 PHz

However, Boaz teaches a transmission system based on electromagnetic radiation with a frequency in the range of 902- 928Mhz **([0063] discloses Transmit and receive frequency: 902-928 MHz)**

Therefore it would have been obvious to one ordinary skill in the art at the time the invention was made to enable the method of Billahrtz implement a transmission system based on electromagnetic radiation with a frequency in the range of 902-928 MHz, as suggested by Boaz. This modification would benefit the method of Billhartz to use a wide range of frequency as a design specification.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bilthartz to **(US20030202476)** in view of and Baines and further in view of Jain to **(US7373543)**

Regarding claim 24, Bilthartz does not explicitly teach wherein the step of determining the one or more routes for the data packet comprises the source node determining at least two routes with substantially same link qualities, and wherein the step of routing the data packet through the determined one or more routes comprises the source node routing the data packet to the at least two routes with substantially the same link qualities

However Jain teaches The method of claim 20, wherein the step of determining the one or more routes for the data packet comprises the source node determining at least two routes with substantially same link qualities, and wherein the step of routing the data packet through the determined one or more routes comprises the source node routing the data packet to the at least two routes with substantially the same link qualities (**abstract discloses identifying a first path and a second path. The first path is between a first one of the network elements and a second one of the network elements, as is the second path, and A packet is sent from the first one of thenetwork elements via the first path, while a duplicate packet is sent from the first one of the network elements via the second path**)

Therefore it would have been obvious to one ordinary skilled in the art at the time the invention was made to enable the system of Bilthartz wherein the step of determining

the one or more routes for the data packet comprises the source node determining at least two routes with substantially same link qualities, and wherein the step of routing the data packet through the determined one or more routes comprises the source node routing the data packet to the at least two routes with substantially the same link qualities, as suggested by Jail. This modification would benefit the system to deliver packets to the intended party more reliably(see Jain, col.2 lines 13-I 9).

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bilthartz to **(US20030202476)** in view of and Baines and further in view Jain to **(US7373543),** and further in view of Boaz to **(US2008/0048883)**

Regarding claim 25, the combination of Bilthartz and Jain does not explicitly teach The method of claim 24, wherein the step of routing the data packet through the determined one or more routes further comprises replacing at least one packet with parity bits prior to routing the replaced data packet.

However, Boaz teaches replacing at least one packet with parity bits prior to routing the replaced data packet(**[0064] discloses CRC error checking on every message**)

Therefore it would have been obvious to one ordinarily skilled in the art at the time the invention was made to enable the combination of Bilthartz and Jain replacing at least one packet with parity bits prior to routing the replaced data packet, as suggested by Boaz. This modification would benefit the combination of Bilthartz and Jain to validate the transmitted packets.

Response to Argument

Applicant's arguments have been fully considered but are not persuasive.

Applicant argues that "There is nothing in [0034] or anywhere else in Billhartz that even remotely suggests that the source node 1 predicts the "future link status of at least one link in a chain" as recited in claim 20. Instead, Billhartz teaches estimating an expected delay associated with traffic flow. The QoS route metrics referred to in the Office Action is, at best, a tool to help in estimating the expected delay. Billhartz indicates that the QoS route metrics are generated based on the QoS link metrics which are updated by the intermediate nodes each according expected delays, which are based on the current conditions at the nodes. Thus, the QoS metrics themselves are, at best, based on the current conditions as well. One skilled in the art would not associate the QoS metrics with predicted future link status information." examiner respectfully disagrees (Billhartz teaches, **[0014] discloses the intermediate nodes and the destination node may detect whether the node can continue to support the requested QoS parameter of the QoS route request and, if not, generate a QoS error notification to the source node**, further, **[0032] discloses The QoS parameter is preferably based upon available bandwidth, error rate, end-to-end delay, end-to-end delay variation, hop count, expected path durability, and/or priority. Thus, the expected path durability reflects a future link status)**

Allowable Subject Matter

Claims 22-23, and 29-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ZEWDU BEYEN whose telephone number is (571)270-7157. The examiner can normally be reached on Monday thru Friday, 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on 1-571-272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Z. B./

Examiner, Art Unit 2461

/Huy D Vu/

Supervisory Patent Examiner, Art Unit 2461